

REMARKS

This application pertains to a novel flexible, single - or multi- layer film having at least one polyamide layer containing from 10 to 2000 ppm of a nano-disperse nucleating agent.

Claims 1, 2 and 4-25 are pending.

The Terminal Disclaimer has not been accepted, and the obviousness-type double patenting rejections maintained, because of a serial number error. This has been corrected in the Terminal Disclaimer submitted herewith.

It is respectfully requested that the accompanying Terminal Disclaimer be entered and the obviousness-type double patenting rejections withdrawn.

Claims 1, 2, 4, 10, 12-15, 17-21 and 23 stand rejected under 35 USC 103(a) as obvious over Khanna US 5,496,918 in view of Mizutani et al US 5,504,128.

The Examiner sees Khanna as disclosing a pure polyamide 6 layer, which does not include "fillers." The Examiner then relies on Mizutani to supply the fillers. The combination, in the Examiner's view, would lead to applicants' film.

The Khanna reference is concerned with improving the physical properties of articles fabricated from nylon 6. To do this, Khanna seeks to produce a highly crystalline material with an extremely fine, dense and uniform morphological structure (column 1, lines 50-54).

The improved physical properties are abrasion resistance, heat distribution temperature, resistance to deformation, resistance to hot water, coefficient of expansion, hardness, yield, tensile strength and surface hardness (column 1, lines 54-60).

The articles are molded articles, such as are produced by injection molding (column 1, line 62).

Khanna emphasized over and over again that he is dealing with molding compositions (column 8, line 52; column 9, line 33; column 10, line 14; column 10, line 55; column 11, line 42).

Khanna achieves his improved properties by increasing the crystallization rate of his molded articles, and he increases the crystallization rate by first reducing the content of oligomeric polyamide in the polyamide composition (column 4, lines 41-48; column 6, lines 1-8).

Khanna mentions that his molding compositions may include various optional components which are additives commonly employed with polyamide resins. A laundry list of such additives is provided, and includes nucleating agents (column 8, lines 51-61).

At the very end of his text, Khanna mentions that the compositions of his invention are useful for fabrication of extruded films, such as films for use in food packaging.

Khanna gives absolutely no details whatsoever about such films or about what

properties would be desired or how such properties could be achieved.

Certainly the properties that one would want in a molding composition are different than the properties one would want in a film.

Notably, Khanna does not teach or suggest anything about "nucleating agents" beyond "conventional."

Khanna has absolutely nothing that would suggest advantages that might be achieved with low levels of nanoscale fillers in films.

There is absolutely no guidance about which, if any, of the laundry list of additives given at column 8, lines 51-58 for molding composition would have any use in films.

It is to be emphasized, however, that even with respect to his molding compositions, Khanna's additives are described as "those which are commonly employed with polyamide resins" (column 8, lines 53/54).

Mizutani, on the other hand, is concerned with engineering plastics for machine materials or electronic parts (column 1, lines 11-12), which are molded (column 1, line 13).

Specifically, Mizutani is concerned with a method for molding a thermoplastic resin at a low temperature while retaining important mechanical characteristics and heat resistance (column 1, line 65 - column 2, line 4).

The invention disclosed by Mizutani is that when an imide is added to a polyarylene sulfide resin composition, the so-treated polyarylene sulfide resin can be used to form a molded article which retains the desired physical properties (column 2, lines 16-24).

At column 7, lines 51 - column 8, line 30 Mizutani; indicates that his imides can be added to other kinds of resins to improve their heat resistance, and lists several dozen additional resins, including nylon 6, as examples.

All of these "other" resins are mentioned with respect to their use as molding compositions; nothing is taught or suggested about films.

At column 9, line 66 - column 10, line 13, Mizutani mentions that the resins, according to their use, may contain a variety of additives, such as a crystal nucleating agent, of which montmorillonite is an example (column 10, line 16).

The "use" however, is clearly the use of an engineered plastic article, as described in column 1; not a film.

Nothing in Mizutani would convey to any person skilled in the art any suggestion about how to prepare an improved polyamide film.

If Khanna and Mizutani were considered together, the only result might be that Khanna's molding compositions might be made more heat resistant by adding imides to

them.

Applicants, by contrast, have discovered that by adding small amounts of nanoscale particles to polyamide film compositions, the resulting films have a surprisingly better transparency, flexibility, pliability and bending strength (application, page 10, lines 21-26; table of data page 15), in contrast to what is achieved with conventionally nucleated polyamides.

Nothing in the Khanna/Mizutani combination of references could possibly lead those skilled in the art to the unexpected advantages that Applicants achieved in polyamide film by the addition of small amounts of nanoscale particles.

In this regard, the Examiner's attention is respectfully drawn to the surprising and unexpected advantages demonstrated in the table of data at page 15 of the specification.

Accordingly, Khanna in view of Mizutani cannot possibly render Applicants' claims obvious, and the rejection of claims 1, 2, 4, 10, 12-15, 17-21 and 23 under 35 USC 103(a) as obvious over said combination of references should be withdrawn.

Claims 1-9, 11-21 and 23-25 stand rejected under 35 USC 103(a) as obvious over Ramesh in view of the combined teachings of Khanna and Mizutani.

According to the Examiner, it would be obvious to use Mizutani's nucleating agent in the amount shown in the reference at the disclosed temperature in the composition of

Khanna in the multilayer structure of Ramesh.

Applicants have already pointed out why no combination of Mizutani and Khanna could possibly arrive at their novel polyamide film. The Examiner has not pointed to anything in Ramesh that would overcome these reasons.

No one would be driven to use a molding composition for a film.

The rejection of claims 1-4, 10-11 and 23-25 under 35 USC 103(a) as obvious over Ramesh in view of the combinations of Khanna and Mizutani should accordingly now be withdrawn.

Applicants note with appreciation that claim 22 would be allowable if amended into independent form. However, Applicants believe that all of the claims are allowable over the references cited, for the reasons give herein.

In view of the above amendments and remarks, it is believed that claims 1-2 and 4-25 are now in condition for allowance. Reconsideration of said claims by the Examiner is respectfully requested and the allowance thereof is courteously solicited.

Should the Examiner not deem the present amendment and remarks to place the instant claims in condition for allowance, it is respectfully requested that this Amendment Under Rule 116 be entered for the purpose of placing the prosecution record in better condition for appeal.